AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) An optical device operative to apply a diffractive effect to produce a diffracted first image and a phase modulation-retardation to produce a polarized second image, said device comprising:

an encoding surface having a micro-relief pattern (22) carried over at least part thereof and having a grating direction,

the micro-relief grating ~~pattern~~ having a predetermined spatial distribution in which the orientation of the grating direction varies across at least part of the encoding surface thereby to produce a predetermined diffracted first image when illuminated in use, and [[an]]

a solid optically anisotropic layer (26) formed of a polymerized liquid crystal material operative to produce a phase modulation-retardation polarized second image, the local ~~located over said encoding surface and having an orientation with the~~ optical ~~axis~~ axes of the polymerized liquid crystal material lying substantially parallel to said encoding surface, and each axis being in respective alignment with the local grating direction of a corresponding adjacent part of the micro-relief

grating so that the orientation of the local optical axes of the polymerized liquid crystal material of said optically anisotropic layer (26) varies across the encoding surface,

wherein ~~at least part of said micro relief pattern induces local orientation of the optical axis of said optically anisotropic layer thereby to align the local optical axis at respective orientations corresponding to the predetermined spatial distribution of said micro relief pattern to impose~~ said optically anisotropic layer (26) imposes a predetermined spatial distribution of polarization modulation ~~and wherein the orientations of the optical axis of said optically anisotropic layer are fixed, thereby~~ to produce a predetermined polarized second image when illuminated in use, so that both a diffracted image and a polarized image are ~~viewable~~ produced in which both the diffracted image and the polarized image vary spatially across at least part of the overall image.

2. (currently amended) An optical device according to Claim 1, wherein said micro-relief ~~pattern~~ grating (22) is provided on the surface of a substrate (20) ~~a layer~~ in contact with said optically anisotropic layer (26) thereby to define said encoding surface.

3. (currently amended) An optical device according to Claim 1, wherein said micro-relief grating (22) ~~encoding surface~~

is formed on a surface of the optically anisotropic layer (26) thereby to define said encoding surface.

4. (currently amended) An optical device according to claim 1, wherein said micro-relief grating (22) ~~encoding surface~~ includes one or more regions having a significant diffractive effect and one or more relatively weakly diffractive regions where there is little or no diffractive effect.

5. (currently amended) An optical device as claimed in claim 1, wherein said micro-relief grating (22) ~~encoding surface~~ includes a plurality of discontinuous areas (74, 76, 78, 80, 82, 84, 86), each of which having a respective orientation of the micro-relief ~~pattern~~ grating thereon, defining respective local optical axes of the optically anisotropic layer.

6. (currently amended) An optical device according to claim 1, wherein a coating thickness of at least part of the optically anisotropic layer (26) is selected having regard to the frequency of the intended illumination in use, to provide phase retardation when appropriately viewed.

7. (currently amended) An optical device according to claim 2, wherein a coating thickness of at least part of the optically anisotropic layer (26) is selected having regard to the

frequency, of the intended illumination in use, to provide a phase retardation when appropriately viewed.

8. (currently amended) An optical device according to claim 1, wherein at least one of: the average thickness of the optically anisotropic layer (26), and its birefringence varies with position across said device to vary the optical retardation induced thereby.

9. (currently amended) An optical device according to claim 1 wherein the ~~encoding surface~~ micro-relief grating (22) is stepped, whereby the thickness of the optically anisotropic layer (26) is stepped by a step distance which is substantially greater than the structure pitch dimension, thereby to provide regions of respective selected retardations.

10. (currently amended) An optical device according to Claim 8, wherein the thickness of said optically anisotropic layer (26), disregarding the micro-relief grating, is generally continuously contoured.

11. (currently amended) An optical device according to Claim 10, wherein the thickness of said optically anisotropic material (26), disregarding the micro-relief ~~pattern~~ grating, varies linearly in at least one dimension.

12. (currently amended) An optical device according to claim 1, wherein the encoding surface is reflective (24) over at least part of the device, whereby at least part of said device is adapted to operate in reflection mode.

13. (currently amended) An optical device according to claim 1, wherein at least part of the surface of the optically anisotropic layer (26) remote from the encoding surface is at least partially reflective.

14. (currently amended) An optical device according to Claim 2, wherein the substrate (20) ~~comprises a~~ is transmissive ~~substrate~~ and at least part of the surface thereof remote from the interface with the optically anisotropic layer (26) is reflective.

15. (previously presented) An optical device according to claim 1, adapted to operate in use in transmission mode.

16. (previously presented) An optical device according to claim 1, adapted to operate in use in reflection mode.

17. (currently amended) An optical device according to claim 1, wherein said optically anisotropic layer (26) comprises a polymerisable liquid crystalline material fixed to a single

substrate, and the polarized image is obtained through local polarization modulations on the single substrate, said anisotropic layer remaining always anisotropic.

18-19. (cancelled)

20. (previously presented) An optical device according to Claim 2, wherein the refractive index of the micro-relief layer is substantially equal to the ordinary or extraordinary refractive index of the optically anisotropic layer.

21. (currently amended) A method of producing an optical device which comprises:

providing an encoding surface having a micro-relief grating (22) carried over at least part thereof and having a grating direction,

the micro-relief grating having a predetermined spatial distribution in which the orientation of the grating direction varies across at least part of the encoding surface thereby to produce a predetermined diffracted first image when illuminated in use, and

providing a solid optically anisotropic layer (26) formed of a polymerized liquid crystal material operative to produce a phase modulation-retardation polarized second image,

the local optical axes of the polymerized liquid crystal material lying substantially parallel to said encoding surface, and each being in respective alignment with the local grating direction of a corresponding adjacent part of the micro-relief grating so that the orientation of the local optical axes of the polymerized liquid crystal material of said optically anisotropic layer (26) varies across the encoding surface,

whereby said optically anisotropic layer (26) imposes a predetermined spatial distribution of polarization modulation thereby to produce a predetermined polarized second image when illuminated in use,

so that both a diffracted image and a polarized image are produced in which both the diffracted image and the polarized image vary spatially across at least part of the overall image

~~providing an encoding surface having a micro relief pattern over at least part thereof, the micro relief pattern having a predetermined spatial distribution thereby to produce a predetermined diffracted first image when illuminated in use, and~~

~~providing an optically anisotropic layer of liquid crystal material over said encoding surface, having an orientation with the optical axis or axes lying substantially parallel to said encoding surface,~~

~~wherein at least part of said micro relief pattern induces local orientation of the optical axis of said optically anisotropic layer thereby to align the local optical axis at~~

~~respective orientations corresponding to the predetermined spatial distribution of said micro relief pattern to impose a predetermined spatial distribution of polarization modulation, wherein the orientations of the optical axis of said anisotropic layer are fixed, thereby to produce a predetermined polarized second image when illuminated in use.~~

22. (currently amended) A method according to Claim 21, which includes providing a micro-relief ~~layer~~ grating and applying said layer of optically anisotropic material thereto thereby to define said encoding surface, said a micro-relief ~~layer~~ grating comprising a substrate, said anisotropic material being polymerized and fixed, the polarized image being obtained through local modulations made only on the substrate, said anisotropic layer remaining always anisotropic.

23. (currently amended) A method according to Claim 21, wherein said micro-relief ~~pattern~~ grating is formed by embossing.

24. (currently amended) A method according to Claim 21, wherein said micro-relief ~~pattern~~ grating is formed by UV curing of a suitable material in contact with a master.

25. (previously presented) A security device including an optical device according to claim 1.

26. (previously presented) A bank note including an optical device according to claim 1.

27. (previously presented) A security document including an optical device according to claim 1.

28. (previously presented) An Identification Card including an optical device according to claim 1.

29. (previously presented) A container including an optical device according to claim 1.

30. (previously presented) Packaging including an optical device according to claim 1.

31. (previously presented) A data storage device including an optical device according to claim 1.

32. (previously presented) A method of authentication of an article or substance, which comprises applying to said article or substance an optical device in accordance with claim 1, and thereafter examining said article or substance for the presence of at least one of said first and second images.

33-34. (cancelled)